REMARKS

Claims 1-4, 6, 8-10 and 12 have been examined on their merits and are all the claims presently pending in the application.

1. Claims 1-4, 6, 8-10 and 12 stand rejected under 35 U.S.C. § 101 because the claims are not tangible. Applicant traverses the § 101 rejection of claims 1-4, 6, 8-10 and 12 for at least the reasons discussed below.

The Patent Office states that the enabling disclosure discusses functional blocks and the claimed invention is not being implemented in any type of hardware. The Patent Office further states that the claims should be amended to recite a hardware embodiment and define that at least one of the steps as necessarily implemented in hardware. Applicant believes that such an amendment is totally unnecessary and unwarranted, in view of the Federal Circuit caselaw, as discussed below.

All the pending apparatus claims recite a pseudo-random sequence generator, along with receivers and transmitters. One of ordinary skill in the art, reading the specification, would understand that these devices are used for electronic communications, and are thus more than mere abstract entities. *See In re Dossel*, 115 F.3d 942, 946-47 (Fed. Cir 1997) for additional support ("Clearly, a unit which receives digital data, perform a complex mathematical computations and outputs the results to a display must be implemented by or on a general or special purpose computer."). Applying the rubric of *In re Dossel* to the amended claims, the

written disclosure and the drawings, Applicants respectfully submit that claims 2-4, 6, 8-10 and 12 recite statutory subject matter under 35 U.S.C. § 101.

Furthermore, *In re Alappat*, 31 U.S.P.Q.2d 1545, 1557 (Fed. Cir. 1994), states that:

> The claimed invention as a whole is directed to a combination of interrelated elements which combine to form a machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means. This is not a disembodied mathematical concept which may be characterized as an "abstract idea," but rather a specific machine to produce a useful, concrete and tangible result.

Independent claims 2 and 8 recite interrelated elements that packetize a pseudo-random bit sequence into multi-carrier data symbols by using N bits of the pseudo-random bit sequence per multi-carrier data symbol. Independent claims 2 and 8 recite a specific machine that produces a useful, concrete and tangible result. Applying *In re Alappat* to the amended claims, the written disclosure and the drawings, Applicants respectfully submit that claims 2-4, 6, 8-10 and 12 recite statutory subject matter under 35 U.S.C. § 101.

As discussed in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 47 U.S.P.Q.2d 1596, 1601 (Fed. Cir. 1998):

> [T]he transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"-- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

Each independent claim to encode multi-carrier data symbols with pseudo-random bit sequences or decode multi-carrier data symbols with pseudo-random bit sequences to

extract the symbols therein, which is a useful, concrete and tangible result. Critically, in *State Street*, the Federal Circuit did not require that the data processing system recited in claim 1 of U.S. Patent No. 5,193,056 include any additional means for processing or handling the final share price – the fact that the data processing system output the final share price was sufficient for claim 1 to be considered statutory subject matter under 35 U.S.C. § 101. Applying *State Street* to the amended claims, the written disclosure and the drawings, Applicants respectfully submit that claims 2-4, 6, 8-10 and 12 recite statutory subject matter under 35 U.S.C. § 101.

In *AT&T Corp. v. Excel Communication, Inc.*, 50 U.S.P.Q.2d 1447, 1452 (Fed. Cir. 1999), the Federal Circuit held that because "the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of Section 101." While the mathematical principles of independent claim 1 are significantly more complex that the Boolean principles at issue in *Excel*, independent claim 1 comports perfectly with the Federal Circuit's holding in *Excel*, in that mathematical principles are used to packetize a pseudo-random bit sequence into multi-carrier data symbols by using N bits of the pseudo-random bit sequence per multi-carrier data symbol, which is a useful, concrete and tangible result. Applying *Excel* to the amended claims, the written disclosure and the drawings, Applicants respectfully submit that claim 1 recites statutory subject matter under 35 U.S.C. § 101, and no amendment is necessary.

Furthermore, the Federal Circuit in *State Street* held that "[u]npatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied

concepts or truths that are not 'useful.' ... [T]o be patentable an algorithm must be applied in a 'useful' way." *State Street*, 47 U.S.P.Q.2d at 1601. Applicants respectfully submit that the pending claims recite "new and useful" patentable subject matter under § 101, because the claim packetizes a pseudo-random bit sequence into multi-carrier data symbols by using N bits of the pseudo-random bit sequence per multi-carrier data symbol, which is a practical, useful result of the claimed invention. Thus, Applicants respectfully submit that the claim 1 recites recite patentable subject matter under 35 U.S.C. § 101.

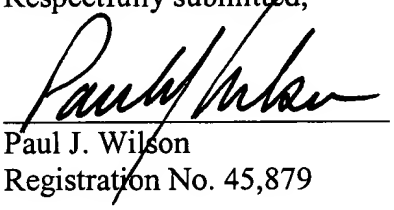
Thus, Applicant submits that claims 1-4, 6, 8-10 and 12 recite statutory subject matter under 35 U.S.C. § 101, and requests that the Patent Office reconsider and withdraw the 35 U.S.C. § 101 rejection against claims 1-4, 6, 8-10 and 12.

2. Claims 3, 4, 6, 9, 10 and 12 stand objected to under 37 C.F.R. § 1.75(c) as allegedly being of improper dependent form. Applicant herein amends claims 3, 4, 6, 9, 10 and 12 to overcome the § 1.75(c) objection. Applicant submits that the § 1.75(c) has been overcome, and requests withdrawal of same.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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